

ABSTRACT OF THE DISCLOSURE

A wafer W is placed on a lower electrode 106 provided inside a processing chamber 102 of an etching apparatus 100 and a gas containing C₄F₈ is induced into the processing chamber 102. A controller 112 implements control to apply 27MHz power to an upper electrode 114 from a plasma generating power supply 120 and to intermittently apply 800KHz power to the lower electrode 106 from a biasing power supply 108. While the biasing power is on, an insulating film 202 constituted of SiO₂ at the wafer W is etched, whereas a polymer (protective film) 208 is formed at a photoresist film 206 while the biasing power is off. Adopting the above method, contact holes achieving a specific shape can be formed by improving the selectivity of the insulating film relative to the photoresist film.

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EXPLANATION OF THE REFERENCE NUMERALS

100 etching device
102 processing chamber
104 processing container
106 lower electrode
108 matcher
110 biasing power supply
121 controller
114 upper electrode
114a gas outlet hole
116 insulating member
118 matcher
120 plasma generating power supply
122 gas supply pipe
124 evacuating pipe
200 substrate
202 insulating film
206 photoresist film
208 polymer (protective film)
210 contact hole
W wafer

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